

2 17) (Twice Amended) An apparatus for detecting degradation of a rope comprising a rope body of non-ferromagnetic insulator material encasing at least one longitudinally extended ferromagnetic component, the apparatus comprising:

a detector body comprising rope guide means for guiding the rope along the detector body;

a magnet fixed with respect to the body for creating a partial magnetic circuit in a portion of the ferromagnetic component of the rope that is adjacent to the detector body, the magnet comprising a pair of magnetic poles located adjacent the rope body and spaced longitudinally relative to the rope when the rope is guided along the detector body by the rope guide means so that the partial magnetic circuit runs from one of the magnetic poles longitudinally through the portion of the ferromagnetic component to the other of the magnetic poles;

magnetic flux sensing means mounted with respect to the detector body for monitoring magnetic flux that is emanating from the ferromagnetic component out through the rope body at a position between the poles and is associated with the magnetic field; and

means for correlating the magnetic flux with rope degradation, wherein the at least one longitudinally extended ferromagnetic component comprises a plurality of ferromagnetic cord members,

the magnetic flux sensing means comprises a plurality of magnetic flux sensors mounted to the body,

the plurality of magnetic flux sensors each corresponds to one of the ferromagnetic cord members such that each magnetic flux sensor monitors the magnetic flux of a respective one of the cord members, and

the plurality of magnetic flux sensors is positioned with respect to the detector body so that the magnetic flux sensors are on opposing sides of the rope when it is guided along the detector body.

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18) (Twice Amended) An apparatus for detecting degradation of a rope comprising a rope body of non-ferromagnetic insulator material encasing at least one longitudinally extended ferromagnetic component, the apparatus comprising:

a detector body comprising rope guide means for guiding the rope along the detector body;

a magnet fixed with respect to the body for creating a partial magnetic circuit in a portion of the ferromagnetic component of the rope that is adjacent to the detector body, the magnet comprising a pair of magnetic poles located adjacent the rope body and spaced longitudinally relative to the rope when the rope is guided along the detector body by the rope guide means so that the partial magnetic circuit runs from one of the magnetic poles longitudinally through the portion of the ferromagnetic component to the other of the magnetic poles;

magnetic flux sensing means mounted with respect to the detector body for monitoring magnetic flux that is emanating from the ferromagnetic component out through the rope body at a position between the poles and is associated with the magnetic field;

means for correlating the magnetic flux with rope degradation; and

means for mounting the apparatus in an elevator assembly in such a manner as to enable the rope guide means to engage and guide an installed elevator rope so that the apparatus can detect degradation of the elevator rope.

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19) (Twice Amended) An apparatus for detecting degradation of a rope comprising a rope body of non-ferromagnetic insulator material encasing at least one longitudinally extended ferromagnetic component, the apparatus comprising

a detector body comprising rope guide means for guiding the rope along the detector body;

a magnet fixed with respect to the body for creating a partial magnetic circuit in a portion of the ferromagnetic component of the rope that is adjacent to the detector body, the magnet comprising a pair of magnetic poles located adjacent the rope body and spaced longitudinally relative to the rope when the rope is guided along the detector body by the rope guide means so that the partial magnetic circuit runs from one of the magnetic poles longitudinally through the portion of the ferromagnetic component to the other of the magnetic poles;

magnetic flux sensing means mounted with respect to the detector body for monitoring magnetic flux that is emanating from the ferromagnetic component out through the rope body at a position between the poles and is associated with the magnetic field;

means for correlating the magnetic flux with rope degradation ; and

means for mounting the apparatus to an elevator hoist machine assembly in an elevator assembly in such a manner as to enable the rope guide means to engage and guide an installed elevator rope so that the apparatus can detect degradation of the elevator rope.